Traveler Safety | Policy Paper

TranPlan 21 – 2002 Update

State of Montana
Department of Transportation

TRANPLAN 21

Montana Department of Transportation

Traveler Safety Policy Paper

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I. Introduction

This policy paper describes the current initiatives and potential policy goals and actions that the Montana Department of Transportation (MDT) could implement to improve public safety on the State's public roadways. These goals and actions were adopted as part of the *TranPlan 21 2002 Update* process.

The policy paper is organized into the following sections:

II. Traffic Safety Trends. This section presents the overall trends on fatalities, injuries, and accidents in Montana, as well as a few key trends on types and causes of accidents in the State.

III. Highway Safety Issues. This section presents the transportation safety issues of concern to the users and operators of the roadway infrastructure in Montana. These issues were raised through the *TranPlan 21 2002 Update* issue identification process.

IV. Policy Goals and Actions. This section presents potential actions that MDT could take to address the issues raised by the technical analysis and stakeholder input. These policy goals and actions are long range in nature and address the next 20 years. Policies and actions include investments in special projects, engineering design changes, and procedural actions involving coordination and information sharing between MDT and other state agencies.

MDT includes safety as one of the Department's key missions in serving the public. Since accidents and fatalities cost society lives and economic resources, ensuring public safety is an effective means of supporting the State's general welfare and economy. Safety measures include designing and building well-engineered and safe transportation infrastructure, installing guidance equipment on existing infrastructure, and monitoring and identifying problems in the transportation network. The purpose of this policy paper is to identify what actions MDT can take directly and indirectly to improve the overall safety of the users of the State's roadway system.

A. Background

In Montana, several state agencies have roles and responsibilities involving traveler safety:

- **Montana Department of Transportation.** Maintains the State-owned transportation network. MDT's involvement in safety activities is found in several areas:
  - **Rail, Transit, & Planning.** Develops and administers a variety of processes, plans, and programs in support of state and local multimodal transportation programs and projects.
  - **Traffic and Safety.** The Traffic and Safety Bureau's State and Community Program Section Chief currently acts as the Governor's Representative for Highway Traffic Safety. The Bureau is involved in five key areas of safety: 1) planning and managing the hazard elimination program, 2) designing hazard

elimination projects, 3) assessing safety issues involving human factors, 4) overseeing rail transportation safety, and 5) coordinating the safety management system. For the Hazard Elimination Program, the Bureau identifies and prioritizes projects to eliminate safety hazards, secures federal funding for those projects, and conducts design activities prior to letting contracts for construction. The Bureau oversees programs to identify safety problem areas associated with human factors, such as alcohol and driving, or misuse of seatbelts.

- **Motor Carrier.** Regulates commercial motor carrier industry operators in Montana and enforces state and federal commercial and agricultural motor carrier laws, rules, and regulations. Motor Carrier Services Division Enforcement Officers conduct commercial vehicle and driver safety inspections at all Montana weigh stations, and MCS Patrol Officers conduct inspections on the open road.

- **Engineering.** Manages and conducts roadway designs; develops and sets design specifications and criteria; monitors construction activities, design and engineering standards and specifications that set criteria for the design of roads and freeways.

- **Maintenance.** Manages and conducts repairs and preventive maintenance of state highways, signage, pavement markings, and structures within the highway right-of-way. Conducts winter plowing and sanding, and year-round repairs to the State highway system. Maintenance activities also include managing the State's Road/Weather Information System (RWIS), which monitors and reports the road and weather conditions at 59 key locations throughout the State. Nearly "real-time" photographs of conditions are published on the RWIS Web site on a continuing basis, providing the public with information to determine which routes are safest when making travel plans. MDT schedules personnel and equipment based on current weather and pavement surface conditions. Real-time weather information improves response time, increases winter maintenance efficiency, and minimizes the traveling public's exposure to hazardous roadway conditions. The Maintenance Division is currently developing a Pavement Marking Management System to track and monitor the condition and maintenance needs of pavement striping throughout the State.

- **Aeronautics.** Aeronautics Division's Safety and Education Bureau is responsible for registering Montana's pilots and aircraft. The Bureau manages air search and rescue training and operations, provides various seminars and clinics, and promotes aviation education.

- **Montana Department of Public Health and Human Services.** Manages public welfare and health advocacy programs in the State.

- **Montana Department of Justice.** Oversees and enforces State laws and regulations. Specifically, the Montana Highway Patrol is the State's "lead" commercial vehicle and driver safety agency, and the Motor Vehicle Division is responsible for Montana's commercial driver's license program.

- **Montana Office of Public Instruction.** Manages and assists in educational programs for the State, including drivers education
- **Montana State University – Northern.** Manages the State's motorcycle training program for on-road licenses.
- **Montana Department of Fish, Wildlife, and Parks.** Manages education and training programs for operating off-road vehicles including motorcycles, quadricycles, and snowmobiles.

Exhibit I-1 summarizes these agencies' key safety responsibilities and activities.

Exhibit I-1: Traveler Safety Responsibilities in Montana State Government

Department or Agency	Roles and Responsibilities
Montana Department of Transportation	
Rail, Transit and Planning Division	
	• Monitors and maintains drug and alcohol testing documentation on drivers for rural general public transportation providers who receive Federal Transit Administration funding. • Conducts initial and periodic inspections of transit vehicles. • Through Bicycle and Pedestrian Coordinator, supports bicycle and pedestrian safety activities.
Maintenance Division	
	• Maintains the state and federally owned roadways (snow removal and traction control; pavement preservation; signage and lane markings). • Manages Road-Weather Information System. • Maintains rest areas.
Highway and Engineering Division	
Traffic and Safety Bureau	• Currently designated as the Montana Governor's Highway Safety Representative. • Supports bicycle and pedestrian safety activities. • Monitors safety performance and statistics (alcohol, seatbelts usage, etc.). • Manages federal 402 Program reporting requirements. • Manages the Hazard Elimination Program (identification and funding of projects to eliminate accident prone areas, based on crash data identified by state, county, local, and federal ownership and identified by location and severity). • Provides information on aging driver awareness and limitations program (sponsored and managed by AARP).
Engineering Oversight Bureau	• Reviews and evaluates active construction projects, completes constructability reviews, and formal post-construction reviews.
Preconstruction Bureau	• Completes technical activities related to project design prior to construction; maintains design standards.
Construction Bureau	• Develops policies and specifications for construction projects.
Aeronautics Division	
	• Air Search and Rescue training and operations. • Responsible for air search and rescue in the state through use of a volunteer search network. • Conducts safety clinics for pilots and other professionals involved in the air transportation industry. • Conducts airport safety inspections through an agreement with FAA.
Montana Department of Transportation – Motor Carrier Services Division	
	• Assures safety of traveling public by regulating the commercial motor carrier industry. • Enforces motor carrier laws and regulations (vehicle weight). • Conducts vehicle and driver safety inspections. • Maintains non-safety related commercial vehicle records.
Montana Department of Health and Human Services	
Health Systems Bureau	• Administers the drug and alcohol substance abuse programs. • Licenses ground and air ambulance services, medical technicians and responders, and implements trauma care and injury prevention systems. • Maintains injury prevention specialties, including advocacy on using child safety seats.

Exhibit I-1: Traveler Safety Responsibilities in Montana State Government

Department or Agency	Roles and Responsibilities
Montana Department of Justice	
Highway Patrol Division	
	• Implements the highway traffic safety management (investigations of accidents; enforcement of driving laws; education). • Patrols highways to maintain safe traffic conditions, enforce laws, assists users, and prevent accidents. • Conducts commercial vehicle and school bus safety inspections. • Maintains commercial vehicle and driver safety records
Motor Vehicle Inspection Section	• Inspects commercial vehicles to reduce truck related accidents. • Enforces driver and vehicle safety regulations. • Conducts carrier safety audits. • Provides public safety education programs.
Records Section	• Maintains statewide repository for Division's records and all Montana vehicle crash records. • Compiles crash records submitted by local law enforcement agencies.
Motor Vehicle Division	
Field Operations Bureau	• Conducts driver examinations. • Issues licenses to commercial drivers.
Records and Driver Control Bureau	• Maintains, revokes, or cancels individual and commercial drivers' licenses. • Motivates drivers to obey traffic laws. • Maintains driver records (convictions, accidents, etc.). • Provides drivers with probationary licenses.
Title and Registration Bureau	• Administers license records (including court-ordered suspensions and revocations). • Issues motor vehicle registrations and titles.
Montana Office of Public Instruction	
Traffic Education Program	• Promotes/assists Montana high schools in offering/conducting driver education programs. • Sets guidelines for curricula and requirements for driver education courses. • Provides/sponsors driver education teacher training. • Conducts periodic on-site review of high school driver education programs. • Develops media (public service announcements, curriculum guidelines, driver training materials). • Provides advanced driver education training. • Promulgates rules regarding school bus safety and training.

B. MDT Managed Safety Activities

MDT manages several programs that involve traffic safety. The Federal Highway Administration, National Highway Traffic Safety Administration, and the Federal Motor Carrier Safety Administration conduct oversight of MDT's various safety functions.

- **Montana 402 Program.** This program reflects MDT's compliance with 23 USC 402. As part of the 402 process, the State certifies that it follows the applicable federal statutes, regulations, and directives that affect the State's ability to receive funding for highway activities. Within the 402 Program, MDT identifies and documents the issues

and problems that affect the overall public safety and economy of the State, such as crash demographics, driver hazardous action statistics, railroad crossing safety, etc. The problems are documented on an annual basis to give some indication of the performance of the State in solving them. The 402 Program must abide by the following federal provisions:

- **The Highway Safety Act of 1966 (23 USC Chapter 4).** Passage of the Highway Safety Act authorized the federal government to set and regulate standards for highway design, a mechanism necessary for effective accident prevention. Many changes in both vehicle and highway design followed this mandate. Roads were improved by better delineation of curves, use of breakaway sign and utility poles, improved illumination, addition of barriers separating oncoming traffic lanes, and installing guardrails. MDT has developed and follows design standards and guidelines for roadway design and construction to meet the federal regulations.
- **23 CFR Chapter II (Parts 1200, 1205, 1206, 1250, 1251).** These regulations govern highway safety programs, which establish the guidelines and procedures for operating highway safety programs under the State and Community Highway Safety Grant Program; identify what highway safety programs are eligible for federal funding; establish procedures to invoke the sanctions applicable to any state that does not comply with the highway safety program requirements; establish guidelines for the states to assure they meet the requirements and provide 40 percent political subdivision participation in state highway safety programs; and prescribe the minimum authority and functions of the State Highway Safety Agency established in each state by the Governor under the authority of the Highway Safety Act.

- **Hazard Elimination Program (HEP).** Funded primarily by the Federal Highway Surface Transportation Program (STP) funds, through TEA-21. The purpose of the HEP is to reduce accidents at high accident locations and to encourage engineering improvements that address identified safety needs. This federally funded program requires Montana to identify hazardous locations on all public roads, assign priorities for necessary corrections at these locations, and establish a schedule of improvement projects. Projects on Indian reservation lands are all 100 percent funded by the federal government. Local governments and Indian Nations are invited to participate in this program by submitting proposed countermeasures to identified crash trends. Presently, safety projects are funded with a 90 percent federal share and a 10 percent state fund match. Most projects are located on the state-maintained highway system.
- **DUI.** MDT provides funding to local police agencies to cover overtime costs for police to conduct DUI enforcement activities.
- **Access management.** MDT's access management program looks to increase traffic flow, decrease congestion, and eliminate safety problems through several project and corridor level design standards and criteria. The 1999 Access Management Project identified several recommendations for implementing a statewide program.

- **Corridor or route specific safety activities.** MDT has initiated several programs and projects to improve the safety of travelers in specific areas or along highly traveled corridors:
  - **Climbing lanes/Passing lanes.** MDT has built additional lane capacity in mountainous regions in order to handle slow moving recreational and commercial vehicles, and to provide a means for faster vehicles to pass without using the oncoming traffic's travel lanes.
  - **Route segment plans.** MDT has developed roadway design specifications for particular route segments. MDT has developed specifications to standardize roadway design specifications, which have not been implemented consistently across jurisdictional boundaries.
  - **Rumble strips.** MDT recently reviewed and updated the rumble strip policy, based on input from the public.
  - **Side slope grade reduction.** In an effort to reduce vehicle rollover in the event of accidents, MDT has reduced the slope between roadway surfaces and drainage areas running parallel to the roadway.
  - **Intelligent Transportation Systems.** MDT manages a Web site for public access to roadway and weather conditions, including viewing real time conditions through 11 automated cameras. In addition, the MDT maintains a toll-free number providing updated roadway conditions during winter, and construction reports during the summer.

II. Traffic Safety Trends in Montana

MDT's Traffic and Safety Bureau has identified several problem areas specific to traffic safety in Montana. MDT has collected and analyzed data for accidents on public roadways throughout the State.[1] Overall, the Montana Highway Patrol, using figures from the National Safety Council for costs of crashes, estimates that the economic losses to Montana from motor vehicle crashes are over $712 million per year.

A. Overall Trends

Exhibit II-1 presents a few key trends in traveler safety in Montana: accidents, fatalities, and injuries. Over 22,000 accidents were reported in 2000, with just over half occurring in rural areas. Reported accidents increased by 10 percent over the last five years.

Exhibit II-1: Vehicular Fatalities and Injuries on Montana Public Roadways, 1990 – 2000

	1990	1995	2000	Percent Change		
				1990 – 1995	1995 – 2000	1990 – 2000
MT VMT*	8,332	9,399	9,882	12.8%	5.1%	18.6%
National VMT*	2,147,501	2,422,775	2,749,803	12.8%	13.5%	28.0%
MT Injury Accidents†	5,710	6,993	7,256	22.5%	3.8%	27.1%
MT Rate‡	68.53	74.40	73.43	8.6%	-1.3%	7.1%
National Rate‡	*118.32*	*97.10*	*76.66*	*-17.9%*	*-21.0%*	*-35.2%*
MT Fatalities	212	216	237	1.4%	10.2%	11.8%
MT Rate‡	2.54	2.30	2.40	-10.1%	4.8%	-5.7%
National Rate‡	*2.07*	*1.73*	*1.52*	*-16.4%*	*-12.1%*	*-26.6%*
MT Injuries	8,280	10,255	10,264	23.9%	0.1%	24.0%
MT Rate‡	99.38	109.11	103.87	9.8%	-4.8%	4.5%
National Rate‡	*167.65*	*147.91*	*115.97*	*-11.8%*	*-21.6%*	*-30.8%*

Source: MDT, FHWA, NHTSA, Dye Management Group, Inc. analysis.

*In millions.

†Reported accidents. Data is not easily comparable from year to year due to changes in reporting procedures by local authorities.

‡Per 100 million miles traveled.

[1] *TranPlan 21* public input identified several caveats about state accident statistics, especially for non-fatal accidents. For example, non-fatal accidents on reservations may be unreported or may be reported to local or federal agencies that do not relay the information to the Traffic and Safety Bureau.

The following trends highlight traffic and accident statistics over the last ten years:

- Accidents in urban areas have decreased slightly over the last five years; however, in both five-year periods 1990 – 1995 and 1995 – 2000, the number of accidents in rural areas has increased.
- Between 1990 and 2000, fatalities have increased almost 12 percent, while traffic volume (measured in vehicle miles traveled) has increased almost 25 percent. The fatality rate has declined by nearly 6 percent over the same period.
- Fatality rates increased over the five-year period 1995 – 2000 compared to the 1990 – 1995 period, from 2.30 to 2.40 fatalities per 100 million miles traveled. The fatality rate has increased in line with the volume of traffic (4.2 and 4.9 percent respectively).
- Accident and fatality rates have declined significantly on a national level compared to Montana.

It should be noted that data is not easily comparable from year to year due to changes in reporting procedures by local authorities. For example, local public safety agencies do not report all traffic crashes to the Montana Highway Patrol for inclusion in statewide records. In addition, some accidents go unreported, because local agencies may only investigate and report on accidents with fatalities or injuries.

In addition, the number of accidents reported varies because of a change in the rules set by the legislature for reporting accidents based on the value of property damaged. Weather also is a factor in the number of accidents and fatalities occurring from one year to the next. A winter with long and frequent periods of ice and snow impacts the number of crashes.

Exhibit II-2 illustrates how Montana compares to surrounding states. Overall, Montana has the highest fatality rate, yet rates second to Idaho in the number of fatalities. From a national perspective, Montana has a disproportionate number of fatalities when compared to population and vehicle miles traveled.

Exhibit II-2: Safety Statistics for Neighboring States, 2000

State	Population	VMT (millions)	Fatalities	Fatality Rate
Montana	**902,000**	**9,882**	**237**	**2.40**
Idaho	1,294,000	13,534	276	2.04
North Dakota	642,000	7,217	86	1.19
South Dakota	755,000	8,432	173	2.05
Wyoming	494,000	8,090	152	1.88
U.S.	***274,634,000***	***2,749,803***	***41,821***	***1.52***
Montana / U.S. Total	0.33%	0.36%	0.57%	

Source: U.S. Census Bureau, FHWA Highway Statistics, Dye Management Group, Inc. analysis.
Note: Fatality rate per 100 million miles traveled.

The exhibit shows that for 2000, while Montana has approximately one-third of one percent of the country's population, it had over one-half of one percent of fatalities that occurred on the country's roadways.

B. Driver Behavior Trends

Driver behavior is a leading cause of injury accidents and reduced traveler safety. Driving under the influence of alcohol and lack of seatbelt usage are some of the trends that are commonly watched by safety advocates.

- **Driver experience or age**

  Nationally, newly licensed drivers with less than a year's experience have the highest crash rate per number of licensed drivers and are involved in more fatal accidents than any other driver age group. A lack of driving experience and a tendency toward risk-taking contribute to these statistics. This is true in Montana, as illustrated in Exhibit II-3 below.

Exhibit II-3: Crash Rates by Age Group, 2000

Age Group	Crashes per 1000 Licenses	Fatal Crashes per 1000 Licenses
Under 16	222	1.41
16	143	0.92
17	134	0.89
18	124	0.95
19	94	0.38
20	88	0.45
Under 21	*123*	*0.75*
21 – 24	74	0.59
25 – 29	55	0.49
30 – 39	48	0.51
40 – 49	39	0.32
50 – 59	33	0.36
60 – 69	27	0.37
70+	30	0.40
Overall	**49**	**0.44**

Source: MDT, Traffic Information System, Dye Management Group, Inc. analysis.

The exhibit shows that as drivers age, they are involved in fewer crashes, and fewer crashes that result in fatalities, indicating that experience is a strong factor in driver safety. Inexperienced or young drivers are two to three times more likely to be involved in fatal crashes than the population in general.

Between 1990 and 2000, the percentage of crashes involving young drivers in Montana has not changed. In 1990, 23.7 percent of the drivers under 21 years old were involved in accidents. In 2000, this figure had increased to 24.0 percent, a change of 1.3 percent. Over the same period, the percentage of elderly drivers (55 and above) has increased up to 7.1 percent of the driving public. This indicates that elderly drivers are also becoming higher risk drivers; when coupled with the trend in an aging population, this indicates the State may experience an increase in the number of accidents and fatalities per 1000 licensed drivers in the upper age groups.

- **Driving under the influence**

  Driving Under the Influence (DUI) is a key contributor to poor driving behavior. Overall, alcohol-related crashes accounted for nearly 10 percent of all crashes recorded in 2000, and alcohol accounts for more than one-third of all vehicular fatalities in the State. It should be noted that most alcohol-related crashes involve only one vehicle. Exhibit II-4 illustrates how age is a contributor in alcohol-related crashes, those crashes in which the investigator determined that alcohol was present.

Exhibit II-4: Alcohol-Related Crashes

Year	Fatal Crashes		All Crashes	
	Alcohol-Related	Percent of Total	Alcohol-Related	Percent of Total
Overall:				
- 1991	80	46.5%	2,332	13.7%
- 1995	71	38.2%	2,313	11.3%
- 2000	74	36.8%	2,211	9.9%
Percent Change	-7.5%		-5.2%	
Drivers Under 21:				
- 1991	15	45.5%	584	9.8%
- 1995	14	36.8%	492	6.4%
- 2000	13	26.5%	497	6.2%
Percent Change	-13.3%		-14.9%	

Source: MDT Traffic Information System, Dye Management Group, Inc. analysis.

The exhibit shows that drivers age 21 and under experienced a greater decrease in fatal and injury accidents than the general population.

- **Seatbelt usage**

  Montana's seatbelt law was enacted in 1987. Since then, overall seatbelt usage has climbed from approximately 33 percent to over 75 percent in 2000, as shown in Exhibit II-5.

Exhibit II-5: Seatbelt Usage Rates, 1991 – 2000

	1991	1995	2000	Percent Change		
				1991 – 1995	1995 – 2000	1991 - 2000
Interstate	80.9%	86.4%	91.3%	6.8%	5.7%	12.9%
Primary	72.8%	75.0%	79.5%	3.0%	6.0%	9.2%
City	41.4%	51.3%	58.3%	24.2%	13.6%	41.2%
Other*	49.3%	57.5%	65.5%	16.6%	13.9%	32.9%
All Roads	64.5%	70.1%	75.6%	8.7%	7.8%	17.2%

Source: MDT Traffic and Safety Bureau, Dye Management Group, Inc. analysis.
*Includes rural roads.

The exhibit shows that seatbelt usage is highest on the interstates and primary system; usage on city and rural roads is the lowest (58 percent and 66 percent respectively). Vehicle occupants may think that there is less chance of serious injury on local and rural roads. Occupant restraint usage increased statewide in the last decade, with highest growth in the cities.

Observed usage data indicates that seatbelt usage may be based on time of year and expected duration of individual journeys, with the summer months experiencing slightly higher levels than winter months. This variation may be caused by a greater percentage of short trips during the winter. In the summer, tourist activity, longer trips, and higher occupancy trips tend to increase seatbelt utilization.

MDT has established a policy requiring seatbelt usage for its employees. MDT's contractors and subcontractors are subject to the State's seatbelt law.

- **Hazardous driving**

  Exhibit II-6 shows that the leading causes of crashes in 2000 were alcohol, excessive speed, failure to yield, and careless driving. Of those, careless driving and speed contributed to most of the crashes. Most categories of crashes saw significant increases.

Exhibit II-6: Causal Factors in Accidents

Year	Alcohol	High Speed	Failure to Yield	Careless Driving	Others*
1991	1,436	2,620	3,125	3,264	854
1995	1,532	2,887	3,902	4,133	1,024
2000	1,818	4,396	3,627	5,928	1,371
Percent Change ('95 – '00)	*18.7%*	*52.3%*	*-7.0%*	*43.4%*	*33.9%*

Source: MDT Traffic and Safety Bureau FY2002 Problem Identification Paper, Dye Management Group, Inc. analysis.
Note: Causal factors are determined by the crash investigator; their views are subjective, based on the evidence and their best judgment.
*Includes improper turning and improper backing. Other causal factors include following too close, disregarding signage, improper passing or lane change, and going the wrong way. These are not detailed in the source material.

- **Motorcycle helmet usage**

  While motorcycles are a small portion of the total number of vehicles on the road, and log a small portion of the vehicle miles traveled each year, motorcyclists are at much greater a risk of injury and fatality when involved in accidents. In 2000, motorcycles were involved in 332 crashes, only 1.5 percent of the total. However, 13 motorcyclists were killed, representing over five percent of the State's total road fatalities.

  Montana has a mandatory helmet law only for riders 18 and under. Statistics on helmet usage in 2000 crash reports indicate that overall, only 40 percent of the motorcycle riders were wearing helmets. A sample survey of observed motorcycle riders indicates that helmet use is relatively low on city and local roadways. Only 34 percent of the riders on city streets wear helmets.

C. Pedestrian and Bicycle Accident Trends

Overall, about eight percent of all traffic fatalities per year are non-motorists. A large number of bicycle-related accidents and injuries are unreported each year.

- **Vehicle – pedestrian collisions**

  Overall, vehicle-pedestrian incidents make up a small percentage of the total accidents occurring on Montana's roadways (only 0.7 percent in 2000). Vehicle-pedestrian crashes account for 5.5 percent of all fatal crashes.

Exhibit II-7: Vehicle-Pedestrian Collisions, 1991 – 2000

	1991	1995	2000	Percent Change		
				1991 – 1995	1995 – 2000	1991 – 2000
Crashes*	146	185	161	26.7%	-13.0%	10.3%
Fatalities	12	12	11	0.0%	-8.3%	-8.3%
Percent of all fatalities	7.0	6.5	5.5			
Injuries*	147	171	139	16.3%	-18.7%	-5.4%

Source: MDT Traffic and Safety Bureau, Dye Management Group, Inc. analysis
*Reported. Data is not easily comparable from year to year due to changes in reporting by local authorities.

Traffic and Safety Bureau statistics on pedestrian injuries by activity and location (in intersections, walking in roadway, working on vehicle, and playing in the street) indicates that over the past 10 years, 40 percent of all pedestrian fatalities were caused at intersections or cross walks. Since 1995, injuries to people playing in the street have increased by 30 percent (from nine to 32 pedestrians between 1995 and 2000). It should be noted that many pedestrian injuries are not reported.

- **Vehicle – bicycle crashes**

  Overall, bicycle crashes with motor vehicles represent just less than 1 percent of total crashes, but represent over 3 percent of all fatalities. Crash statistics however, seriously underestimate the actual number of bicycle-related crashes and injuries

because only a small percentage of crashes are reported. Bicyclist injuries are concentrated in the population aged less than 19 years, although there is a growing number of injuries being reported in the higher age groups, 35 and older. The Over 55 age group experienced a growth in bicyclist injuries of 21 percent per year since 1991. The rising popularity in recreational bicycling probably has contributed to this trend.

D. Other Vehicle Accident Trends

- **Run-off-road crashes**

  Over 47 percent of all fatal crashes that occurred in Montana between 1995 and 2000 involved vehicles running off the road. On average, the number of fatal run-off-road crashes is increasing by about 3 percent per year.

Exhibit II-8: Fatal Run-Off-Road Crashes in Montana, 1995 - 2000

	1995	1996	1997	1998	1999	2000	Total
Off-Road Crashes	77	76	109	102	111	88	563
- Single Vehicle	75	76	107	101	108	88	555
- Multiple Vehicles	2	0	2	1	3	0	8
All Fatal Total	186	179	223	208	194	203	1,193
Off-Road / All Fatal	41%	42%	49%	49%	57%	43%	47%

- **Truck involvement in crashes**

  The number of accidents involving trucks on Montana's roadways has increased over the last 10 years, from 959 in 1991 to 1,346 in 2000. The percentage of fatal crashes involving trucks has increased from 21 to 24 accidents.

  Montana has allowed commercial vehicles with two and three trailers to operate for over two decades. These long combination vehicles (LCV) have proven to be the safest commercial vehicles on the road. Multiple-trailer vehicles make up a small portion of the overall commercial truck fleet operating in Montana. Most truck accidents involve vehicles with no trailer or those with a single trailer.

- **Vehicle – train collisions**

  Motor vehicle collisions with trains are a relatively rare event, but the severity of such collisions tends to be very high. On average, about 21 crashes occur per year in the state; 75 percent of these occur in rural areas.

III. Highway Safety Issues

Safety issues of concern to Montanans were identified through open house forums, through mail and telephone surveys with the public, through discussions with MDT staff, and through analysis of traveler safety trends and data. It is important to note that as detailed previously in Exhibit I-1, MDT does not have jurisdiction over many of the policy areas and programs that improve highway safety.

A. Safety Issues Identified by the Public

The *TranPlan 21* update process used stakeholder forums, mail-in surveys, and telephone surveys to identify the key safety issues of concern to the citizens of Montana. Safety issues identified through this mechanism include the following:

- **Roadway capacity**

  A roadway safety issue raised by the public is the perception that emergency equipment responding to incidents are experiencing more delay due to insufficient access, traffic control, and intermodal traffic congestion. The trend in longer railroad train-sets is also believed to prevent emergency vehicles from moving from one side of town to the other. In Billings alone, these longer trains have blocked several busy downtown intersections with at-grade crossings. In addition, people try to run through the warning lights at at-grade railroad crossings. The location of a switching yard near busy traffic intersections could be causing some of the delays.

  In some areas, particularly mountainous regions, no-passing signs and double yellow lines are needed. In addition, more passing lanes in mountainous regions would improve safety.

- **Bicycle and pedestrian safety**

  Bicycle advocates believe that there is insufficient roadway width for large vehicles (RVs and trucks) to pass bicycles, especially in No-Passing Zones. More public service announcements educating motorists, bicyclists, and pedestrian users regarding safety are also needed.

  Effective enforcement of traffic laws is an issue that may require additional legislative action to set standards. There is a perceived failure of the police to enforce the driving laws, which in turn discourages use of existing facilities (for example, the failure of motorists to yield to pedestrians at crossings discourages use of the crossing).

- **Roadway design and human factors**

  Public discussion identified some roadway designs that do not accommodate pedestrians and elderly drivers. In addition, motorcyclists feel that more signage is needed to warn of uneven pavement conditions ahead. As people age, their

transportation needs become increasingly important. Wider road markings and striping and improved signage may be required. Most roadway design standards provide wider, expansive roads almost impassable to some pedestrians. In addition, dust kicked up from under-maintained gravel roads can impair driver vision.

- **Personal safety**

  Personal safety is a key issue for both the public and commercial drivers in Montana. Identified problems with rest areas in the State include an insufficient number of rest areas requiring additional travel time between stops; the lack of parking space, requiring truckers to use on and off-ramp shoulders; and insufficient operating hours and facilities. Compared to other parts of the country, Montana's rest stops are further apart, increasing the likelihood of more fatigued drivers on the State's highways. Unlike other states, many Montana rest stops are not open year round. Upgrading the facilities to include traveler information (road conditions, other rest facilities, etc.) are needed.

- **Motorcycle safety**

  A key safety issue raised by the public involves the inability of in-ground traffic detectors at stoplights to always register motorcyclists. Because of their small size, motorcycles do not always trigger the in-ground sensing devices and do not get protected left turns. To compensate, many motorcyclists choose to make rapid left turns when traffic has cleared or at the end of light cycles.

  Another motorcycle safety issue focuses on signage. Better signage, warning motorcyclists of pavement conditions ahead, is needed, especially in areas where grooved pavement, gravel roads, or construction activities exist.

- **Vehicle and wildlife conflicts**

  Wildlife and vehicle conflicts were raised as hazardous for both drivers and wildlife. Collisions between vehicles and wildlife are also costly to the vehicle owner.

B. Safety Issues Identified by MDT Staff

Specific issues identified with current project design and delivery functions regarding safety include:

- **Project design**

  Safety concerns are generally addressed through roadway design and construction standards.

- **Traffic control and work zone safety**

  MDT addresses safety through traffic control activities completed during design and construction, and ensures that plans and provisions are in place so that vehicles, bikes, and pedestrians can safely transit through a project site.

- **Commercial vehicle safety and inspections**

  MDT is concerned about how new Federal Motor Carrier Safety Administration (FMCSA) rules and regulations will impact the inspection procedures.

  Overall, Montana has been responsive to the need for more parking space and facilities for truckers. The State has worked independently as well as with local governments to develop or expand some rest area facilities to accommodate the increased volume of commercial vehicles. In addition to expanding the footprints of open facilities, MDT is looking to reactivate mothballed or abandoned facilities to accommodate the growing traffic volumes. Many states have developed full-service facilities, typically through concession agreements. To accommodate growth in some communities, MDT has also expanded some weigh station facilities to include rest area facilities, for the exclusive use by commercial vehicle drivers.

  MDT is also Montana's "lead" CVISN agency. CVISN (Commercial Vehicle Information System Network) is the Federal Motor Carrier Safety Administration's premiere commercial vehicle safety initiative. CVISN's goal is to provide "real time" safety information at the roadside so that each state's limited enforcement resources can be focused on carriers with unsafe records.

- **Permanent traffic control and guidance**

  Montana's aging population will require improved visual marking for guidance while driving. While Montana's standard is a 4" wide strip, many other states have shifted to 6" or 8" stripes. In addition, FHWA is in the process of developing a minimum standard of reflectivity of traffic control equipment, such as lane markers and signs. Other options include developing standards and specifications for recessed markers, or longer lasting paints and marking materials.

- **Bicycle and pedestrian safety**

  The State's policy on highway rumble strips has been modified to address bicyclist's concerns. MDT ensures the most effective balance between the need for a rumble strip to make noise and ensure driver alertness with the safety requirements for bicycle use. MDT's future efforts will be to identify the design that best meets all design criteria for motorist and bicyclist safety.

C. Issues from Trends Analysis

- **Driver behavior**

  The State has made significant improvement in reducing the use of alcohol by young drivers; however, the accident rate of young, inexperienced drivers indicates the need to improve their overall knowledge, skills, and abilities to operate on the roads. Overall, improved driver training and skills monitoring will benefit all driver age groups.

- **Comparison with neighboring states**

  Montana has the second highest population among its four neighboring states, but has the highest fatality rate per 100 million miles traveled. This could be an indicator of poor driving habits or a further indicator of lack of driver knowledge and experience.

- **Rest areas operation and maintenance**

  The State does not operate rest areas in some parts of the state on a continuous basis, because of maintenance costs and damage to the facilities due to inclement weather (frozen pipes, etc.).

  Traffic volume statistics have lately proven that keeping some rest areas closed during the winter was counter-productive. Winter traffic volumes (winter sport enthusiasts and retirees) are higher than previously predicted. Consequently, MDT has begun keeping more facilities open year-round for safety purposes.

IV. Policy Goals and Actions

This section lists the potential range of policy goals and actions that MDT can implement to address the safety issues identified in the preceding sections. The range of actions is limited to those that MDT can take. As discussed earlier, other state agencies have jurisdiction over driver licensing, driver competency, and other aspects of driver behavior that are a cause of the majority of fatalities and injury accidents in Montana.

This policy paper groups the range of MDT actions in two categories:

- Actions that MDT can take to improve the management of traveler safety and safety programs and policies on a statewide basis
- Actions that MDT can implement in coordination with other Montana state agencies, especially in facilitating improvements in driver behavior.

The following policy goals and actions were adopted in the *TranPlan 21 2002 Update*:

POLICY GOAL A: Reduce the number and severity of traffic crashes on Montana's roadways.

Purpose: A primary mission of MDT is to ensure the safety of the users of the transportation system. A key measure of success in this mission is to reduce the number of fatalities and injury accidents.

Rationale: Over 200 people per year are killed in roadway accidents on Montana's roadways. There are over 22,000 accidents per year, over 7,000 of those include injuries and fatalities. By national standards, the cost of roadway accidents on Montana's roadways is estimated to exceed $700 million per year.

Action A.1. Review and strengthen the procedures for identifying and defining safety deficiencies and needs at the project planning and development levels by establishing a "reconstruction with safety" improvements category.

MDT addresses safety needs at the project level through the Hazard Elimination Program (HEP). It also addresses safety as part of reconstruction projects. The HEP targets high accident locations and enables MDT to address problems after there have been clusters of accidents. This action is intended to include safety planning in the identification of reconstruction needs. It will strengthen the planning level identification of safety needs and their consideration during project planning and development.

The intent of the action is to take a more proactive approach to addressing safety. This involves assessing safety deficiencies as part of project planning by evaluating the implications of future traffic volumes on the safety of the facility as well as identifying

existing design deficiencies. An example is the safety-related need to address slow moving vehicles, especially where traffic volumes are increasing, through reconstruction projects that include passing lanes around slow moving vehicles (commercial and recreational vehicles) in hilly terrain. To accomplish this, projects would be labeled "reconstruction with safety" improvements where appropriate. The intent is to ensure that projects are assigned the budget to address safety deficiencies as part of reconstruction. The analogy is with the "reconstruction with congestion" guidelines that project designers receive. Another example is the pro-active approach MDT has taken toward commercial vehicle safety enforcement. With the opening in February 2001 of Montana's first commercial vehicle inspection facility on Interstate 90 between Billings and Laurel, Motor Carrier Services (MCS) Division Enforcement Officers now conduct commercial vehicle and driver inspections around the clock, 365 days a year.

Action A.2. Conduct a highway safety management self-assessment and implement the recommendations.

Highway safety is an MDT priority. MDT affects highway safety through the design, maintenance, and operation of the highway system. This action conducts a self-assessment of MDT's design standards and practices as they address safety. It also includes a self-assessment of traffic operations, maintenance, and work zone safety. The self-assessment should be forward looking and address the increased traffic volumes anticipated on the existing system, especially in the faster growing counties.

Potential areas to address in the self-assessment are:

- **Work zone safety**

  MDT is applying the new Manual of Uniform Traffic Control Device (MUTCD) guidelines for work zone safety, for both construction and maintenance work. The self-assessment will determine opportunities for improving on current practices.

- **Design process improvements to incorporate safety considerations into design decisions**

  This involves considering research findings such as AASHTO's Safety Design and Operations Guide, among other work, as part of the self-assessment.

- **Motorcycle safety**

  Motorcycles have different operating characteristics than passenger cars and trucks. In response to motorcycle safety issues, MDT will identify highway practices that will address hazards and other areas of safety concern to motorcyclists. This will draw on the on-going national consideration of these issues by AASHTO, the American Motorcyclist Association, Motorcycle Safety Foundation, NHTSA, and the FHWA. Areas of concern are highway design, operations, and maintenance practices that consider the special needs of motorcycles. Areas of concern also include in-ground loop detectors for protected left turns, work zone hazard warnings, and pavement conditions, including a review of the effectiveness and extent of implementation of the current rumble strip.

- **Driver guidance through pavement markings and delineation**

  Nighttime crash rates are higher than daytime rates. Limited visibility contributes to this differential and can be partially addressed through a standard level of pavement markings. There is much new research in this area for MDT to evaluate its practices against. The visibility needs of the growing elderly population in Montana also need to be considered. MDT could potentially address this area through maintaining a standard level of reflectivity in markers, in accordance with the processes under development by the FHWA.

- **Maintenance practices assessment**

  A self-assessment to identify improvement opportunities in maintenance practices that address safety.

Action A.3. Implement the 1999 Access Management Project recommendations for approach permits as a priority and the other components of the recommended program.

This action implements the recommendations of the 1999 Access Management Project. The implementation of new approach standards will directly reduce the number of accidents on Montana highways. Further, given that the access management program targets growth corridors, the action provides a proactive mechanism for reducing the number of accidents predicted due to travel growth. The access management program will address the safety consequences of increased traffic volumes on Montana's arterial system, especially in the faster growing urban counties.

Action A.4. Consider results of the 2002 Montana Bicycle Safety Study in addressing bicycle safety issues.

MDT is currently conducting a study that directly addresses bicycle safety. The results of the study in addition to other input can be used to address the following issues:

- Identify the needs for roadway and highway signage appropriate for both bicyclists and motorists.
- Review and revise as needed MDT's roadway design guidelines and standards, including those for rumble strips, to address safety and travel concerns of bicyclists.
- Review the statewide needs for providing sufficient shoulder and roadside spacing to accommodate motor vehicles and bicyclists on roadways.
- Identify and incorporate bicycle and pedestrian safety requirements into state and local capital improvement programs, consistent with federal law and prior policy.
- Review and evaluate statewide conditions/needs for bicycle safety and education.

Action A.5. Conduct an assessment of the Safety Management System information collection and reporting needs to improve efforts to address traveler safety issues.

This action is intended to ensure that MDT has the information to evaluate accidents, identify hazards, develop applicable countermeasures, and evaluate performance in improving safety. MDT staff has identified a number of limitations with the current Safety Management System, including inconsistent reporting methodologies for accident locations and types. In addition, not all accidents are recorded using the current reporting procedures. *TranPlan 21* update analysis found that MDT management does not systematically use the safety management system or other agencies as a tool to identify deficiencies, evaluate needs, and improve safety. The intent of this action is to define the information required to ensure that MDT funds are effectively used to accomplish safety policy objectives. A steering committee, consisting of executive level management from all departments and agencies involved with traveler safety, will direct and champion this effort to ensure successful development and implementation.

Action A.6. Address safety requirements, including both driver fatigue and personal safety, in updates to the Rest Area Plan.

This action recognizes that MDT's 1999 Rest Area Plan identifies improved highway safety as the primary benefit of rest areas. The Plan contained several recommendations related to rest areas, including location and development, design, operation, and maintenance. MDT's rest area planning and operations must consider a number of factors. This action recognizes that rest areas play an important role in reducing fatigue for drivers of both cars and motor carriers. For the motor carrier industry, rest areas provide a safe place for vehicles out of service to pull off. A further consideration for the rest area level of service is personal safety for the users of these facilities. This needs to be factored into the design and operation of current and future facilities.

Action A.7. Conduct a study of pedestrian safety conditions and needs.

This action is intended to ensure MDT has information to base decisions and improvements regarding pedestrian safety in project development, as well as identifying pedestrian safety needs and deficiencies in pedestrian safety education. This study will look at alternative solutions and countermeasures to reduce the number and severity of non-motorist fatalities, and analyze crash data in key pedestrian crash locations. It will also look at reporting practices and data collection activities related to pedestrians.

Action A.8. Continue to monitor and evaluate animal and vehicle crash mitigation research methods and projects in Montana.

MDT realizes that vehicle and animal crashes are a hazard to Montana's drivers and wildlife. This action is intended to allow MDT to continue to participate in research opportunities and projects to mitigate animal vehicle crashes.

POLICY GOAL B: Provide leadership and coordinate with other Montana agencies to improve traveler safety.

Purpose: To facilitate a coordinated inter-agency approach to improving traveler safety.

Rationale: Montana trend analysis and national research indicates that many of the policy and program actions that can improve safety in Montana are not within the jurisdictional responsibility of MDT. These include actions such as licensing drivers, improving drivers' competency, reducing impaired driving, and increasing safety awareness. Since it is Montana's Office of Highway Safety, MDT has an important role to play in providing leadership and coordination for traveler safety.

Action B.1. Establish and maintain high-level statewide inter-agency coordination to improve traveler safety and develop an agenda for action.

This action recognizes that improved safety in Montana will require inter-agency coordination and the implementation of actions outside of MDT's jurisdiction. MDT will pursue the use of the existing Interagency Coordinating Council as a mechanism to implement this action. By locating the Governor's Office of Highway Traffic Safety within MDT, the department is placed in a position to initiate inter-agency coordination. Initial coordination work of the council should include those driver-focused initiatives that will reduce accidents, fatalities, and injuries. Agencies that should participate include the appropriate divisions in Montana State and local government including the Department of Justice, Department of Public Health and Human Services, Office of Public Instruction, the Indian Nations, local governments (cities and counties), the Federal Highway Administration, National Highway Transportation Safety Administration, the Federal Motor Carrier Safety Administration, and MDT. Senior management participation from these agencies is essential to ensure buy-in and championing of initiatives recommended and supported by the coordinating council. As a further step, the council should eventually seek input from local jurisdictions and non-governmental organizations.

The action would result in an inter-agency agenda for action and provide an ongoing mechanism for coordination. MDT's Office of Highway Traffic Safety, through the improved safety management system, should be positioned to provide staff support and analysis to identify effective initiatives for improving safety. Again, many of the initiatives would be outside of MDT's authority to implement and not appropriate to include in the *TranPlan 21 2002 Update*.

TranPlan 21 2002 Update analysis and stakeholder and public input suggest the following agenda of actions for consideration by the inter-agency council:

- Assessment of driver licensing and education options that would reduce the accidents and fatalities by young drivers.
- Initiatives to promote and increase the use of occupant restraints and other safety devices.

- Public education and other initiatives to improve safety for motorcyclists and bicyclists.
- Approaches for coordination between agencies to improve crash data reporting.
- Approaches to increasing driver safety awareness.
- Enforcement and educational approaches for reducing impaired driving.
- Approaches for sustaining proficiency in older drivers.
- Measures that ensure drivers are fully licensed and competent.
- Measures to prevent animal-vehicle collisions.

Action B.2. Provide leadership and support to implement the results of Action B.1.

Through this action, MDT will provide senior leadership to facilitate the agenda for actions developed in Action B.1. This would be part of the work of the State's Office of Highway Traffic Safety. The activities will be in support of, and coordinated with, the MDT Business Plan and the Transportation Safety Action Plan.

Action B.3. Continue providing ongoing leadership in air traveler safety.

This action recognizes MDT's role and responsibility for leading the voluntary air search and rescue network within Montana, as well as managing and conducting safety clinics and training for pilots and other professionals involved in air transportation in the State. In addition, MDT will conduct airport safety inspections. The activities will be in support of, and coordinated with, the MDT Business Plan and the Transportation Safety Action Plan.